

IN THE CLAIMS:

1. (Currently amended) A tape guide roller for maintaining a position of tape media, the tape guide roller comprising:

~~a tape guide surface, wherein at least one portion of the tape guide surface is curved and wherein at least another portion of the tape guide surface has substantially zero curvature~~

a first portion of a tape guide surface that has a first curvature;

a second portion of the tape guide surface that has substantially zero curvature; and

a third portion of the tape guide surface that has a second curvature, wherein the second portion is positioned between the first portion and the third portion and wherein the first curvature and the third curvature provide a restoring force to the tape media to move the tape media to an optimal position substantially centered over the second portion.

2. (Original) The tape guide roller according to claim 1, further comprising:
at least one hard stop portion on at least one end of the tape guide surface.

3. (Original) The tape guide roller according to claim 2, wherein the at least one hard stop is at an elevation higher than the tape guide surface.

4. (Original) The tape guide roller according to claim 1, wherein the tape guide surface has a surface with cylindrical symmetry.

5. (Currently amended) The tape guide roller according to claim 4, wherein the cylindrical symmetry of the tape guide surface has a curvature defined by a function and wherein the function is ~~one of~~ a linear function ~~[[and]]~~ or a nonlinear function.

6. (Original) The tape guide roller according to claim 5, wherein the function is one of an exponential, brachistochrone, quadratic polynomial, cubic polynomial, or higher order polynomial.

7. (Canceled)

8. (Original) The tape guide roller according to claim 1, wherein the tape guide surface has a positive curvature.

9. (Original) The tape guide roller according to claim 1, wherein the tape guide surface has a negative curvature.

10. (Original) The tape guide roller according to claim 1, wherein the tape guide roller is one of flanged, unflanged, spinning, stationary, contoured or not contoured.

11. (Currently amended) A tape feeding mechanism for maintaining the position of tape media, the tape feeding mechanism comprising:

at least one tape reel;

a read/write head;

~~a tape guide roller having a tape guide surface, wherein at least one portion of the tape guide surface is curved and wherein at least another portion of the tape guide surface has substantially zero curvature~~

a first portion of a tape guide surface that has a first curvature;

a second portion of the tape guide surface that has substantially zero curvature; and

a third portion of the tape guide surface that has a second curvature, wherein the second portion is positioned between the first portion and the third portion and wherein the first curvature and the third curvature provide a restoring force to the tape media to move the tape media to an optimal position substantially centered over the second portion.

12. (Original) The tape guide roller according to claim 11, further comprising:
at least one hard stop portion on at least one end of the tape guide surface.
13. (Original) The tape guide roller according to claim 12, wherein the at least one hard stop is at an elevation higher than the tape guide surface.
14. (Original) The tape guide roller according to claim 11, wherein the tape guide surface has a surface with cylindrical symmetry.
15. (Currently amended) The tape guide roller according to claim 14, wherein the cylindrical symmetry of the tape guide surface has a curvature defined by a function and wherein the function is ~~one of~~ a linear function ~~[[and]]~~ or a nonlinear function.
16. (Original) The tape guide roller according to claim 15, wherein the function is one of an exponential, brachistochrone, quadratic polynomial, cubic polynomial, or higher order polynomial.
17. (Canceled)
18. (Original) The tape guide roller according to claim 11, wherein the tape guide surface has a positive curvature.
19. (Original) The tape guide roller according to claim 11, wherein the tape guide surface has a negative curvature.
20. (Original) The tape guide roller according to claim 11, wherein the tape guide roller is one of flanged, unflanged, spinning, stationary, contoured or not contoured.

21. (New) A tape feeding mechanism for maintaining the position of tape media, the tape feeding mechanism comprising:

at least one tape reel;

a read/write head;

a first tape guide roller; and

a second tape guide roller, wherein the first tape guide roller and the second tape guide roller include:

a first portion of a tape guide surface that has a positive curvature;

a second portion of the tape guide surface that has substantially zero curvature;

a third portion of the tape guide surface that has a negative curvature, wherein the second portion is positioned between the first portion and the third portion,

wherein the first tape guide roller is positioned in opposition to the second tape guide roller such that the first tape guide roller and the second tape guide roller provide an opposing restoring force to the tape media to move the tape media to an optimal position substantially centered over the second portion of both the first tape guide roller and the second tape guide roller.

22. (New) The set of tape guide rollers according to claim 21, further comprising: at least one hard stop portion on at least one end of the tape guide surface.